In the Claims

The following Listing of Claims replaces all prior versions in the application:

LISTING OF CLAIMS

1. (Previously presented) X-radiation imagery device comprising at least one detection matrix, said detection matrix comprising:

an electric charges reading panel having an area equal to or larger than about 10 cm x 10 cm, said electric charges reading panel including a monocrystalline silicon substrate integrating a plurality of electronic devices; and a detection layer made of a continuous layer of semiconducting material deposited in vapour phase on the electric charges reading panel, the detection layer converting incident X photons into electric charges, each electronic device and a portion of the detection layer formed thereon forming a respective pixel of the detection matrix.

2. (Previously presented) Process for making an X-radiation imagery device comprising at least one detection matrix, said detection matrix comprising (a) an electric charges reading panel having an area equal to or larger than about 10 cm x 10 cm, said electric charges reading panel including a monocrystalline silicon substrate integrating a plurality of electronic devices, and (b) a detection layer made of a semiconducting material converting incident X photons into electric charges, said process comprising:

forming the electronic devices on the monocrystalline silicon substrate to produce the electric charges reading panel; and

vapour-phase depositing the semiconducting material on the electric charges reading panel so as to form the detection layer made of a continuous layer of the semiconducting material, thereby forming a matrix of detection pixels, each detection pixel including a corresponding electronic device and a portion of the detection layer formed thereon.

3. (Previously Presented) Process according to claim 2, in which the evaporation properties of this semiconductor are such that the deposition can be done at a temperature lower than a temperature that damages the electronic devices.

4. (Original) Process according to claim 2, in which the semiconducting material used to make the matrix of detection pixels is CdTe, HgI_2 or PbI_2.

5. (Previously presented) Process according to claim 2, in which electronic devices made using a process technology having a feature device size of 1.25 μm are used.

6. (Previously presented) Process according to claim 2, in which electronic devices made using a process technology having a feature device size of 0.1 μm are used.

7. (Previously presented) X-radiation imagery device according to claim 1, wherein the detection layer is deposited directly on the electronic devices of the electric charges reading panel in each pixel.

8. (Previously presented) X-radiation imagery device according to claim 1, wherein the semiconducting material of the detection layer is crystalline silicon.

9. (Previously presented) X-radiation imagery device according to claim 1, wherein each of said electronic devices comprising at least one of:

an amplifier;

a preamplifier;

a filter; or

a processing circuit.

10. (Previously presented) X-radiation imagery device according to claim 9, wherein said processing circuit includes at lease one of:

a reading circuit;

an integration circuit; or

a counting circuit.

11. (Cancelled)

12. (Currently amended) The method in accordance with claim 2, wherein said vapour-phase depositing comprises:

controlling a temperature of the deposition so as not to damage the electronic devices of the electric charges reading panel ~~mad~~ made of monocrystalline silicon.

13. (Previously presented) The method in accordance with claim 2, further comprising:

assembling more than one detection matrices to form a large area digital detector.

14. (Previously presented) X-radiation imagery device comprising at least one detection matrix, said detection matrix comprising:

an electric charges reading panel having an area equal to or larger than about 10 cm x 10 cm, said electric charges reading panel including a monocrystalline silicon substrate integrating a plurality of electronic devices, each electronic device including an amplifier; and

a detection layer made of a continuous layer of a semiconducting material deposited in vapour phase on the electric charges reading panel, the detection layer converting incident X photons into electric charges, each electronic device and a portion of the detection layer formed thereon forming a respective pixel of the detection matrix.

15. (Previously presented) X-radiation imagery device according to claim 14, wherein each of said electronic devices further comprising at least one of:

a preamplifier;

a filter; or

a processing circuit.

16. (Previously presented) Method for making an X-radiation imagery device comprising at least one detection matrix, said detection matrix comprising an electric charges reading panel having an area equal to or larger than about 10 cm x 10 cm, said electric charged reading panel including (a) a monocrystalline silicon substrate integrating a plurality of electronic devices, and (b) a detection layer made of a semiconducting material converting incident X photons into electric charges, said method comprising:

forming the electronic devices on the monocrystalline silicon substrate to produce the electric charges reading panel, each of the electronic devices including an amplifier; and

vapour-phase depositing the semiconducting material on the electric charges reading panel so as to form a continuous detection layer made of thesemiconducting material, thereby forming a matrix of detection pixels, each detection pixel including a corresponding electronic device and a portion of the detection layer formed thereon.

17. (Currently amended) X-radiation imagery device according to claim 1, wherein said device has a detection area of about ~~a few~~ one or more dm^2.

18. (Previously presented) Process according to claim 2, wherein said monocrystalline silicon substrate is obtained from a monocrystalline silicon wafer having a diameter of about 10 cm to about 30 cm.

19. (Previously presented) X-radiation imagery device according to claim 14, wherein said device has a detection area of about a few dm^2.

20. (Previously presented) Process according to claim 16, wherein said monocrystalline silicon substrate is obtained from a monocrystalline silicon wafer having a diameter of about 10 cm to about 30 cm.